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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* SANGKEUN RHEE, ERIC J. RAINAL,  
and MICHAEL P. DELLA VECCHIA

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Appeal 2008-0631  
Application 10/783,357  
Technology Center 1700

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Decided: February 26, 2008

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Before FRED E. MCKELVEY *Senior Administrative Patent Judge*,  
MICHAEL P. TIERNEY and JAMES T. MOORE, *Administrative Patent  
Judges*.

MOORE, *Administrative Patent Judge*.

DECISION ON APPEAL

1

2 STATEMENT OF CASE

3 The Appellants appeal under 35 U.S.C. § 134 (2002) from a final  
4 rejection of claims 1-29 and 40-43.<sup>1</sup> We have jurisdiction under 35 U.S.C.  
5 § 6(b) (2002).

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<sup>1</sup> Claims 30-39 have been canceled, and claims 44-49 have been withdrawn.

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1       The Appellants' claims are directed to multilayer sheets and films  
2composed of a fluoropolymer layer, an adhesive tie layer and a  
3thermoplastic polymer layer.

4       Claims 1 and 40 are the only independent claims in the application.  
5The Appellants argue the rejection of claims 1-28 and 40-42 together.  
6Therefore, we select independent claim 1 to decide the appeal regarding this  
7rejection. 37 C.F.R. § 41.37 (c)(1)(vii)(2006). Accordingly, the remaining  
8claims subject to this rejection stand or fall with claim 1.

9       The Appellants also argue the rejection for dependent claims 29 and  
1043 together. We select dependent claim 29 to further decide the appeal  
11regarding this rejection, and claim 43 stands or falls with claim 29.

12      Claim 1 reads as follows:

13      1. A multilayered film comprising:  
14       a) a fluoropolymer layer having first and second surfaces;  
15       b) an adhesive tie layer, having first and second surfaces, on the  
16       fluoropolymer layer with the first surface of the adhesive tie  
17       layer on the first surface of the fluoropolymer layer; which  
18       adhesive tie layer comprises a combination of at least one  
19       tackifier and at least one ethylene/alpha-olefin copolymer; and  
20       c) a thermoplastic polymer layer, having first and second  
21       surfaces, on the adhesive tie layer with the first surface of the  
22       thermoplastic polymer layer on the second surface of the  
23       adhesive tie layer.

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25      Claim 29 reads as follows:

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27      29. A tube formed from the multilayered film of claim 1.

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1 THE EVIDENCE  
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3 The Examiner relies upon the following as evidence in support of the  
4rejections:

5	Urawa	US 4,751,270	Jun. 14, 1988
6	Tsai	US 2003/0008152 A1	Jan. 09, 2003
7	Kawachi	US 6,656,601 B1	Dec. 02, 2003
8	Jing	US 6,849,314 B2	Feb. 01, 2005

9

10 THE REJECTIONS  
11

12 The following rejections are before us for review:

131. Claims 1-28 and 40-42 stand rejected under 35 U.S.C. § 103(a) over  
14the combination of Tsai (US Patent Application 2003/0008152), Kawachi  
15(US Patent 6,656,601), and Urawa (US Patent 4,751,270).

162. Claims 29 and 43 stand rejected under 35 U.S.C. § 103(a) (2004) over  
17the combination of Tsai, Kawachi, and Jing (US Patent 6,849,314).

18 We AFFIRM.

19 ISSUE

20 Have the Appellants established that the Examiner erred in  
21determining that it would have been obvious to one of ordinary skill in the  
22art at the time the invention was made to combine the claimed elements, all  
23of which are known in the prior art and are being used for their known  
24functions?

25 FINDINGS OF FACT

26 The record supports the following findings of fact by a preponderance  
27of the evidence.

28 1. Tsai is directed to multilayer films that have a high moisture  
29barrier and are substantially transparent. (Tsai p. 1, para. 0002).

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1        2. Tsai describes that it is well known in the art to produce multilayer  
2fluoropolymer films. (p. 1, para. 0004).

3        3. Tsai describes a multilayer film that comprises a fluoropolymer  
4layer and a cyclic olefin copolymer layer, i.e., a thermoplastic polymer layer,  
5attached by an adhesive tie layer. (p. 1, para. 0008, 0013).

6        4. Tsai describes that suitable adhesive polymers for the adhesive tie  
7layer include the modified polyolefin compositions described in Urawa. (p.  
82, para. 0015).

9        5. Urawa describes that copolymers of alpha-olefin, such as ethylene,  
10are useful for the preparation of its modified polyolefin compositions.  
11(3:44-47).

12        6. Tsai differs from the claimed invention because Tsai does not  
13describe that the adhesive tie layer comprises a tackifier.

14        7. Kawachi describes an adhesive ethylene copolymer composition  
15comprising an ethylene/alpha-olefin copolymer and a tackifier. (3:1-18).

16        8. An object of Kawachi is to increase the adhesive strength of  
17adhesive ethylene copolymer compositions. (2:55-60).

18        9. Kawachi describes that an adhesive composition containing a  
19tackifier provides a layer having good adhesive force. (Abstract).

20        10. Kawachi describes that the tackifer is a solid amorphous polymer  
21useful in the field of adhesives. (18:59-61).

22        11. Kawachi describes that the preferred tackifiers have good  
23dispersability in the ethylene/alpha-olefin copolymers. (19:24-29).

24        12. Jing describes processes for preparing multilayer articles  
25featuring a fluoropolymer blend layer into tubing. (1:1-10; 9:28-36).

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1        13. Jing describes that the articles of the invention have excellent  
2 interlayer adhesion and these multilayer articles remain transparent. (3:49-  
351).

4 PRINCIPLES OF LAW

5        “Section 103 forbids issuance of a patent when ‘the differences  
6 between the subject matter sought to be patented and the prior art are such  
7 that the subject matter as a whole would have been obvious at the time the  
8 invention was made to a person having ordinary skill in the art to which said  
9 subject matter pertains.’” *KSR International Co. v. Teleflex Inc.*, 127 S. Ct.  
101727, 1734 (2007).

<sup>11</sup> “If a person of ordinary skill can implement a predictable variation,  
<sup>12</sup> § 103 likely bars its patentability.” *Id.* at 1740.

13 ANALYSIS

14 I. The Rejection of Claims 1-28 and 40-42 under 35 U.S.C.  
15§ 103(a) over Tsai, Kawachi, and Urawa.

16 Claims 1-28 and 40-42 stand rejected under 35 U.S.C. § 103(a) over  
17 Tsai, Kawachi, and Urawa. The Examiner found that Tsai describes a  
18 multilayer film comprising a fluoropolymer layer and a thermoplastic layer  
19 attached by an adhesive tie layer. (Non-Final Rejection, Apr. 6, 2006, p. 4).  
20 Tsai describes that the adhesive tie layer is made of an ethylene/alpha-olefin  
21 copolymer evidenced by Urawa that is referenced in Tsai. (*Id.*). However,  
22 the Examiner determined that Tsai does not teach that the adhesive tie layer  
23 comprises a tackifier. (*Id.*).

24 The Examiner found that Kawachi describes an adhesive composition  
25 of ethylene/alpha-olefin copolymer containing a tackifier. (Non-Final  
26 Rejection, Apr. 6, 2006, p. 4.). The Examiner determined that the purpose

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1of the Kawachi invention was to obtain an adhesive composition having  
2high adhesive force between polymers. (*Id.* 4-5).

3       The Examiner then concluded that it would have been obvious to one  
4of ordinary skill in the art at the time the invention was made to use  
5Kawachi's adhesive composition comprising a tackifier and an  
6ethylene/alpha-olefin copolymer as an adhesive tie layer in Tsai's multilayer  
7film to obtain a film with increased adhesive strength between the  
8fluoropolymer layer and thermoplastic layer. (Non-Final Rejection, Apr. 6,  
92006, p. 5).

10       The Appellants assert that the Examiner "improperly combined the  
11references" to reject claims 1-28 and 40-42 as being obvious. (App. Br. 7 ).  
12Specifically, the Appellants argue that "there is no teaching or suggestion in  
13either reference to combine the multilayer films disclosed by Tsai et al. with  
14the adhesive compositions described by Kawachi et al." (*Id.*; Reply Br. 2).  
15The Appellants further assert that Kawachi does not teach that its adhesive  
16compositions would be compatible with fluoropolymers nor that the  
17compositions would be sufficient to adhere fluoropolymer layers with other  
18polymeric layers. (App. Br. 7).

19       This argument is not persuasive. A reason to combine teachings  
20need not be expressly stated in any prior art reference. *In re Kahn*, 441 F.3d  
21977, 989 (Fed. Cir. 2006). There need only be an articulated reasoning with  
22rational underpinnings to support a reason to combine teachings. *Kahn*, 441  
23F.3d at 988. Here, the Examiner explained that the combination of Tsai with  
24Kawachi was suggested by the references and the knowledge of one with  
25ordinary skill in the art who reviewed the references.

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1        Specifically, the Examiner found that Tsai describes a multilayer film  
2 having a fluoropolymer layer, an adhesive tie layer, and a thermoplastic  
3 polymer layer. Tsai expressly describes that the adhesive tie layer may be  
4 comprised of the adhesive compositions described in Urawa. The Examiner  
5 also found that Urawa describes adhesive compositions comprising an  
6 ethylene/alpha-olefin copolymer.

7        Turning to Kawachi, the Examiner found that it also describes  
8 adhesive compositions comprising an ethylene/alpha-olefin copolymer.  
9 However, Kawachi's composition also contains a tackifier, known in the art  
10 to provide good adhesive force to film layers.

11       From these facts, it is apparent that the Examiner rationally  
12 determined that it would have been obvious for a person skilled in the art at  
13 the time of the invention who reviewed Tsai, Urawa, and Kawachi to  
14 substitute Urawa's ethylene/alpha-olefin adhesive composition with  
15 Kawachi's ethylene/alpha-olefin adhesive composition containing a tackifier  
16 for improved adhesive force.

17       That Appellant urges that Kawachi does not expressly describe the  
18 compatibility or sufficiency of its composition with fluoropolymers. This (1)  
19 misplaces the burden of proof, (2) is contrary to the weight of the evidence  
20 of record, and (3) does not render the suggested combination nonobvious.

21       In rebutting the case of obviousness, the Applicant/Appellant may  
22 come forth with persuasive evidence or argument that the combination is  
23 improper, for reasons which may include "compatibility" or operativeness of  
24 the combination. It is not the burden of the Examiner to establish  
25 compatibility. We note that the Appellant has pointed to a mention in Jing  
26 (6,849,314; 1:29-31) that "... fluoropolymers are known to be difficult to

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1bond.” Such a passing mention is insufficient to overcome the clear  
2preference of the combination of prior art.

3       For example, Tsai and Urawa provide clear teachings that  
4ethylene/alpha-olefin adhesive compositions are compatible with  
5fluoropolymers. Additionally, Kawachi describes that its tackifier is a  
6polymer that has good dispersability in the ethylene/alpha-olefin  
7copolymers. The Appellant has not sufficiently rebutted this evidence that it  
8would be within the understanding of one ordinarily skilled in the art that  
9compatibility/sufficiency teachings of Tsai and Urawa also apply to the  
10ethylene/alpha-olefin adhesive composition of Kawachi.

11       The Appellants next argue that the Examiner “has applied an  
12impermissible ‘obvious to try’ standard of patentability” by stating in the  
13Final Rejection that “[i]t is not unreasonable for one of ordinary skill to try a  
14polymer adhesive with all types of polymers, whether specifically mentioned  
15or not.” (App. Br. 7-8, quoting Final Rejection, Jul. 7, 2006, 3; Reply Br. 4).  
16The Appellants assert that the Examiner’s statement represents the kind of  
17error where,

18       what would have been ‘obvious to try’ would have been to vary  
19       all parameters or try each of numerous possible choices until  
20       one possibly arrived at a successful result, where the prior art  
21       gave either no indication of which parameters were critical or  
22       no direction as to which of many possible choices is likely to be  
23       successful.  
24

25(App. Br. 7)(quoting *In re O'Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988)).

26       This argument is without merit. The Appellants mischaracterize the  
27basis of the Examiner’s obviousness rejection by referencing a response  
28offered during the prosecution of their application. A close review of the

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1specifically recited grounds of the Examiner’s rejection reveals that the  
2Examiner does not rely on an “obvious to try” rationale in determining that  
3the claimed invention is obvious. (See Non-Final Rejection, Apr. 6, 2006,  
4pp. 4-5; see also Ans. 9).

5        Rather, the Examiner based the rejection upon the fact that Kawachi  
6teaches that a tackifier is a well known adhesion additive to ethylene/alpha-  
7olefin adhesive polymers, making it obvious to one of ordinary skill in the  
8art at the time of the invention to add a tackifier to the ethylene/alpha-olefin  
9adhesive polymer described by Tsai. (See Non-Final Rejection, Apr. 6,  
102006, 4-5; see also Ans. 9). Therefore, the Examiner’s rejection did not rely  
11upon a skilled artisan arriving at the claimed invention by “vary[ing] all  
12parameters” of the prior art or “try[ing] each of numerous possible choices”  
13without direction.

14        Of note, we observe that the Appellants have not shown that the  
15addition of a tackifier in such an adhesive was not well known in the art.

16        In this same vein, the Appellants further assert that the applied  
17references do not provide one of ordinary skill a reasonable expectation of  
18success in achieving the claimed invention as “there is difficult[y] in  
19successfully bonding fluoropolymer layers to non-fluoropolymer film  
20layers.” (App. Br. 8).

21        This argument is also without merit. Again, the Appellants  
22incorrectly assume that the Examiner relied on an “obvious to try” rationale  
23for rejecting the claims. Further, Tsai overcame any “difficult[y] in  
24successfully bonding fluoropolymer layers to non-fluoropolymer film  
25layers” by applying an adhesive tie layer comprised of an ethylene/alpha-  
26olefin adhesive polymer. Arriving at the claimed invention, as discussed

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1supra, involved only the obvious step of adding a tackifier to the Tsai's  
2adhesive polymer. One ordinarily skilled in the art at the time of the  
3invention who reviewed Kawachi knew that a tackifier provides a layer  
4having good adhesive force and that preferred tackifiers have good  
5dispersability in the ethylene/alpha-olefin copolymers. (Kawachi Abstract,  
619:24-29). This teaching, along with that of Tsai and Urawa provide a  
7reasonable expectation of success.

8       Consequently, we do not find error with the Examiner's rejection of  
9claims 1-28 and 40-42 as being obvious over the combination of Tsai,  
10Urawa, and Kawachi.

11       II.     The Rejection of Claims 29 and 43 under 35 U.S.C. § 103(a)  
12over Tsai, Kawachi, and Jing.

13       Claims 29 and 43 stand rejected under 35 U.S.C. § 103(a) over  
14Tsai, Kawachi, and Jing. The representative claim, dependent claim  
1529, reads: "A tube formed from the multilayered film of claim 1."

16       As described in the rejection of claims 1-28 and 40-42, the Examiner  
17found that the combination of Tsai and Kawachi teach the limitations of  
18independent claim 1. (Non-Final Rejection, Apr. 6, 2006, p. 6). The  
19Examiner determined that Tsai and Kawachi do not describe forming the  
20multilayer film into a tube. (*Id.*). However, the Examiner determined that  
21Jing describes that it is well known in the art to form films containing  
22fluoropolymer layers into tubes to provide articles with chemical resistance  
23and low fuel permeation. (*Id.*). Therefore, the Examiner concluded that it  
24would have been obvious to one of ordinary skill in the art at the time the  
25invention was made to form the multilayer article of Tsai and Kawachi into a

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1tube as described by Jing because it was well known in the art that such a  
2tube provides chemical resistance and low fuel permeation. (*Id.* at 7).

3       The Appellants argue that the Examiner erred in rejecting claims 29  
4and 43 for the same reasons advanced for the rejections of 1-28 and 40-42  
5and assert that Jing “fails to overcome the differences between Tsai et al.  
6and Kawachi et al. and the claimed invention.” (App. Br. 9). Specifically,  
7the Appellants assert that Jing does not teach a “multilayer film comprising a  
8fluoropolymer layer being attached to a non-fluoropolymer layer via a non-  
9fluoropolymer containing adhesive tie layer,” and does not teach a “tie layer  
10including an ethylene/α-olefin copolymer and a tackifier.” (App. Br. 9).

11       This argument is unpersuasive for the same reasons discussed  
12regarding the rejections of claims 1-28 and 40-42. Moreover, the  
13obviousness rejection of claims 29 and 43 cannot be overcome by attacking  
14Jing individually where the rejection is based upon the teachings of a  
15combination of references. *See In re Merck & Co. Inc.*, 800 F.2d 1091, 1097  
16(Fed. Cir. 1986). It is the cited combination of Tsai, Kawachi, and Jing  
17which discloses all of the limitations of dependent claim 29. The Examiner  
18has only relied upon Jing to demonstrate that it is well known in the art to  
19form films containing fluoropolymer layers into tubes.

20       Finally, we are also unpersuaded insofar as the Appellants argues that  
21the cited references do not provide any suggestion to combine the multilayer  
22film of Tsai and Kawachi with the tube of Jing, or that such combination  
23results from “reconstructing the art in light of the Appellants’ disclosure.”  
24(App. Br. 9-10).

25       We have previously discussed that the Examiner’s reasoning for  
26combining Tsai and Kawachi is supported by the evidence. Similarly, it

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1would have been obvious to a person of ordinary skill in the art at the time  
2the invention was made to combine Tsai with Jing. Tsai describes a  
3multilayer film comprising a fluoropolymer layer and Jing describes forming  
4multilayer films featuring a fluoropolymer layer into a tube. Jing also  
5describes that the process of forming the film into a tube provides excellent  
6interlayer adhesion and allows the multi-layer articles to remain transparent.  
7Therefore, a skilled artisan would form the film of Tsai and Kawachi into  
8the tube of Jing to yield a multilayer article with excellent interlayer  
9adhesion and transparency.

10        Furthermore, as explained in *In re McLaughlin*, 443 F.2d 1392, 1395  
11(CCPA 1971), “Any judgment on obviousness is in a sense necessarily a  
12reconstruction based upon hindsight reasoning ....” Reconstruction is  
13proper if it relies on ordinary skill at the time of the invention and not on  
14knowledge gained solely from the applicant’s disclosure. *Id.*

15        Here, Jing teaches forming a multilayer film having a fluoropolymer  
16layer, as in the combination of Tsai and Kawachi, into a tube. The only  
17reconstruction performed relies upon an ordinary skill in the art at the time  
18of the invention to combine the tackifier of Kawachi with multilayer film of  
19Tsai and to then form the film into Jing’s tube. Therefore, we conclude that  
20the examiner did not err in determining that it would have been obvious to  
21one of ordinary skill in the art at the time of the invention to combine the  
22references to arrive at the claimed invention. Such a conclusion is not the  
23result of inappropriate hindsight.

24        Accordingly, we affirm the Examiner’s rejections.

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1                           CONCLUSION OF LAW

2         On the record before us, the Appellants have not shown error on the  
3part of the Examiner. It would have been obvious to one of ordinary skill in  
4the art at the time the invention was made to combine the known elements of  
5the prior art for their known functions.

6                           DECISION

7         The Rejection of claims 1-28 and 40-42 under 35 U.S.C. § 103(a) as  
8being unpatentable over Tsai, Kawachi, and Urawa is AFFIRMED.

9         The Rejection of claim 29 and 43 under 35 U.S.C. § 103(a) as being  
10unpatentable over Tsai, Kawachi, and Jing is AFFIRMED.

11         No time period for taking any subsequent action in connection with  
12this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2006).

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14                           AFFIRMED

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